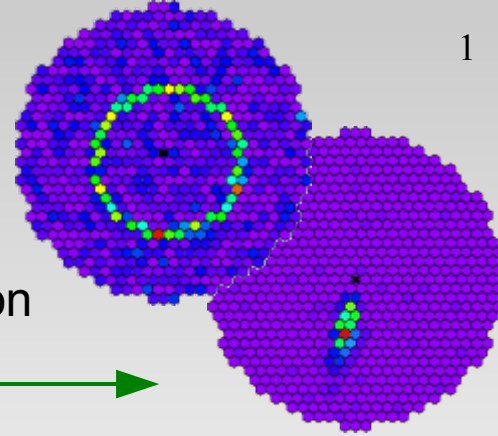
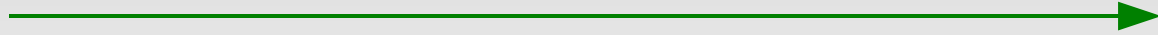




CERES

Camera Electronics and REflector Simulation



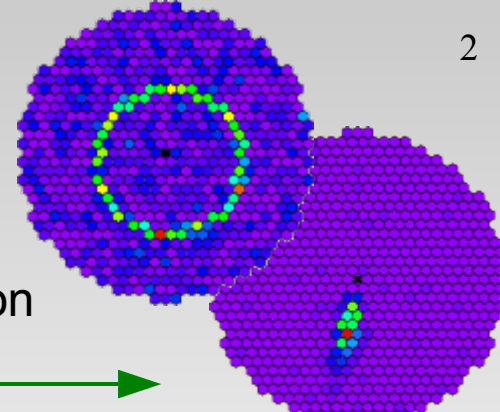
PRELIMINARY !

Especially the data after callisto and star is not optimized.

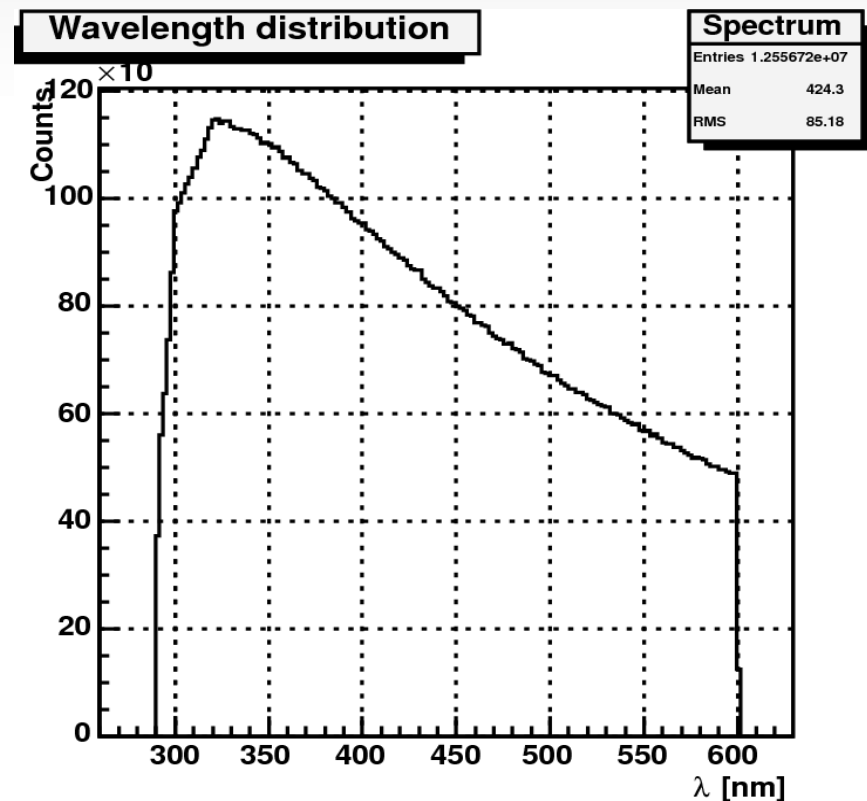


CERES

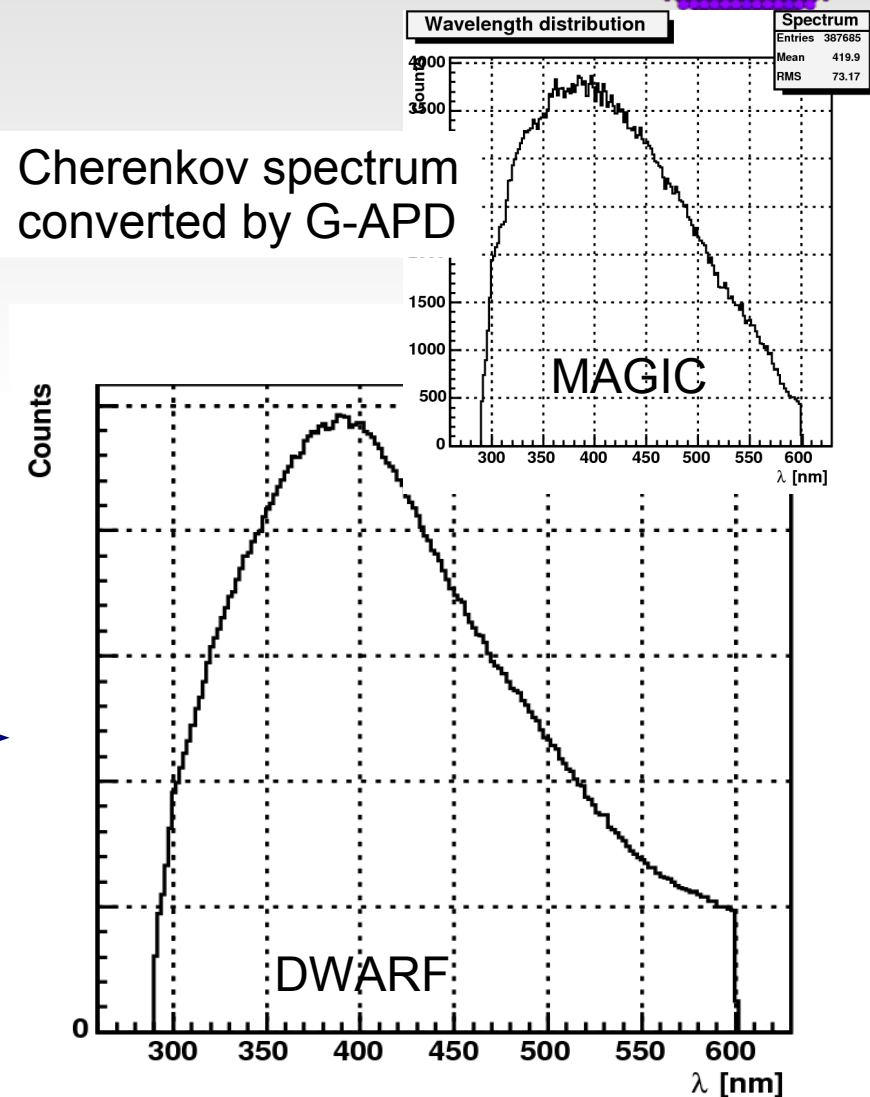
Camera Electronics and REflector Simulation



Cherenkov spectrum after atmospheric absorption



Cherenkov spectrum converted by G-APD

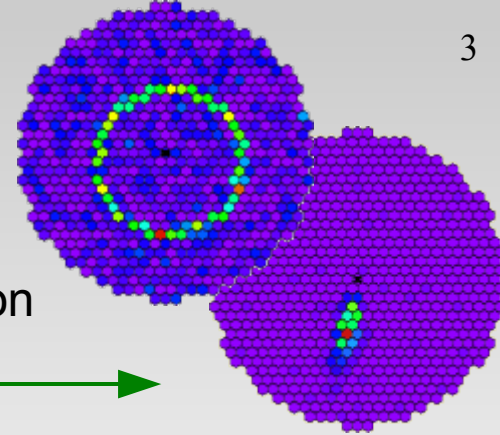


Mirror & APD
acceptance

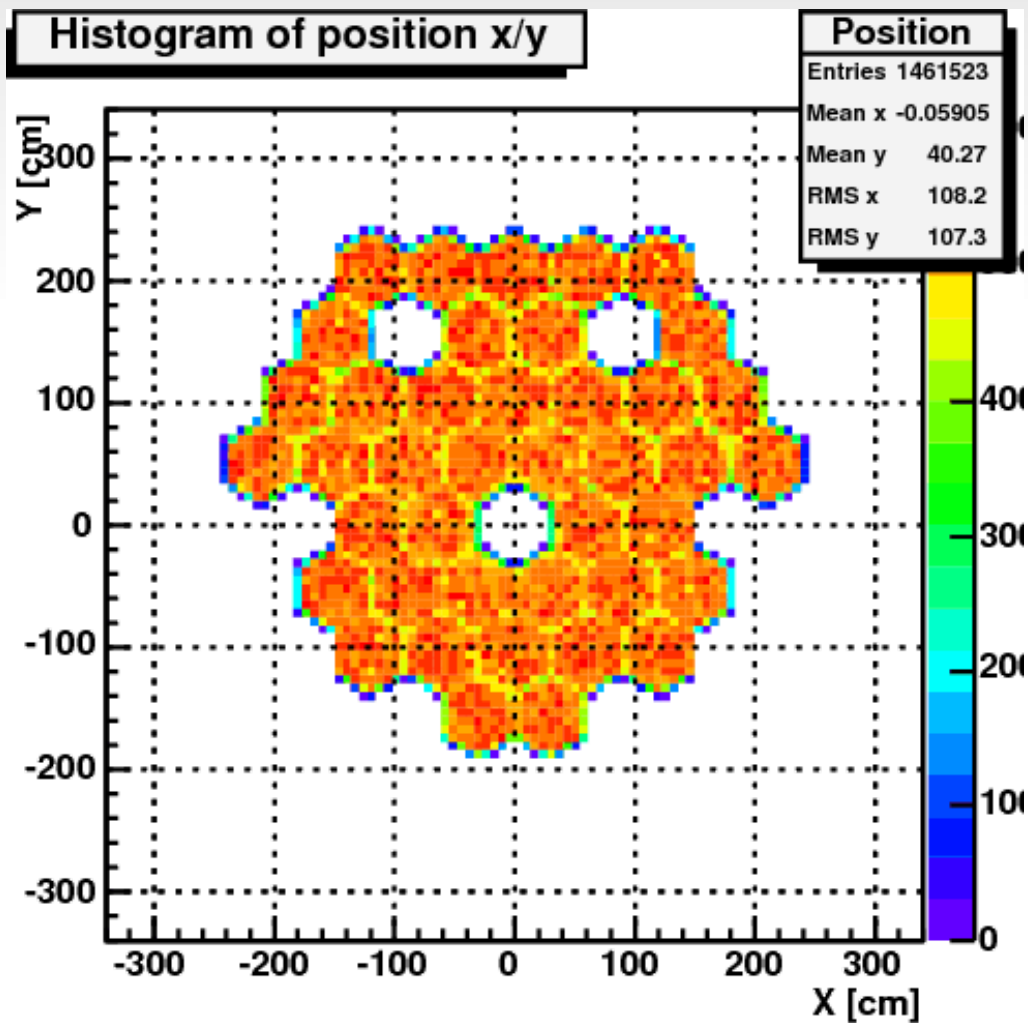


CERES

Camera Electronics and REflector Simulation



Histogram of position x/y

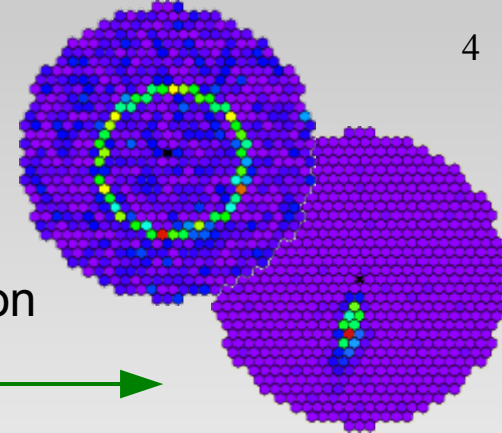


Photon distribution
reflected by the mirrors



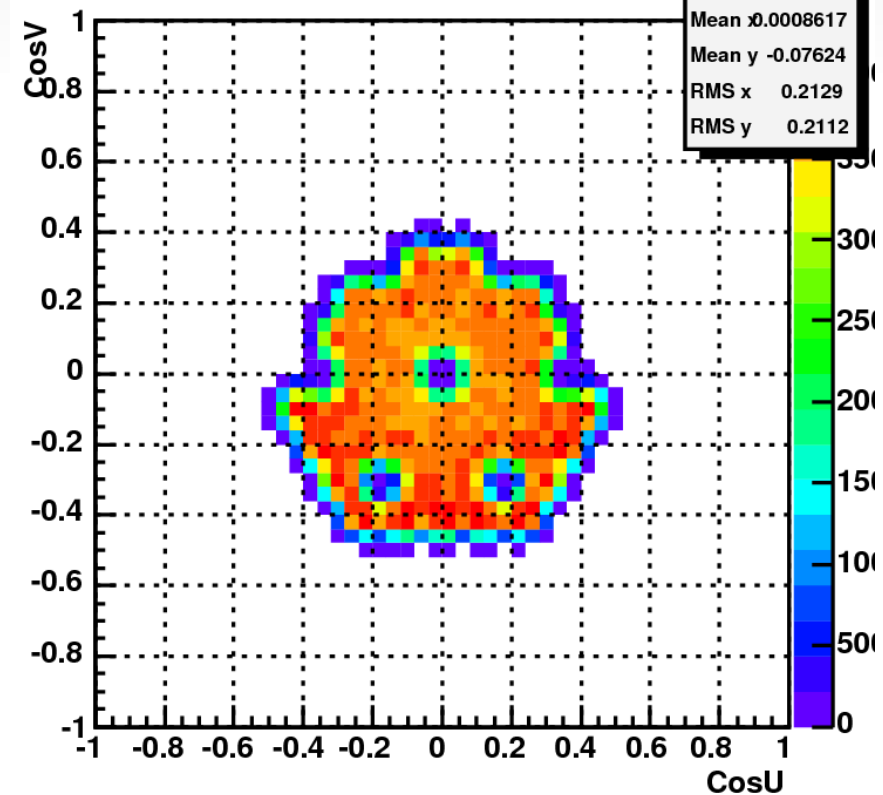
CERES

Camera Electronics and REflector Simulation



Direction cosines at focal plane
before cones

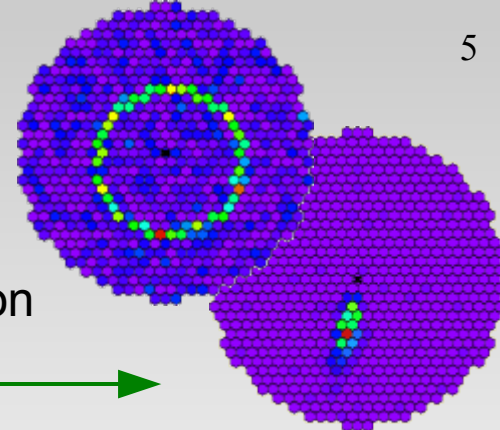
Histogram of arrival direction CosU/CosV





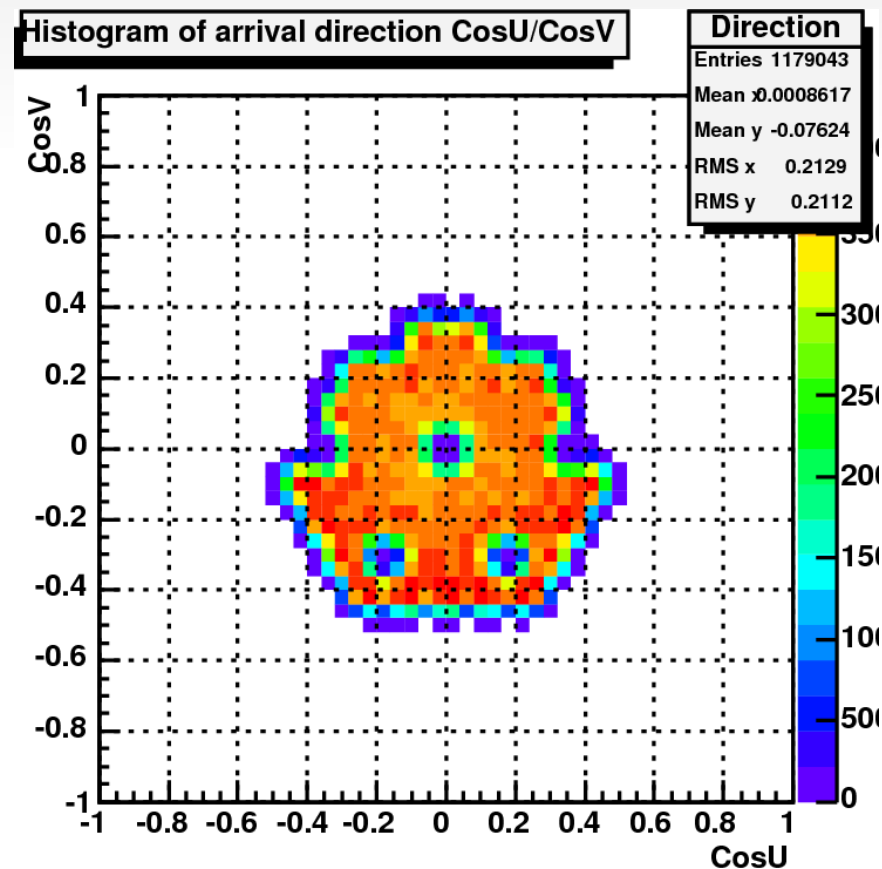
CERES

Camera Electronics and REflector Simulation

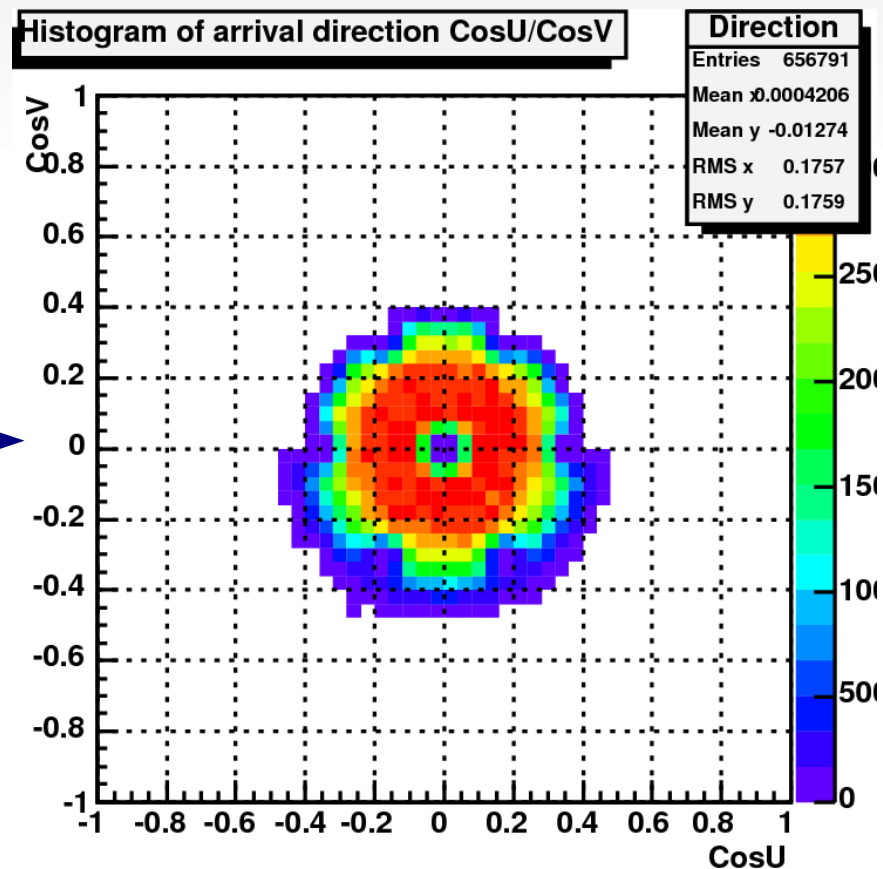


Direction cosines at focal plane
before cones

Direction cosines at focal plane
after cones



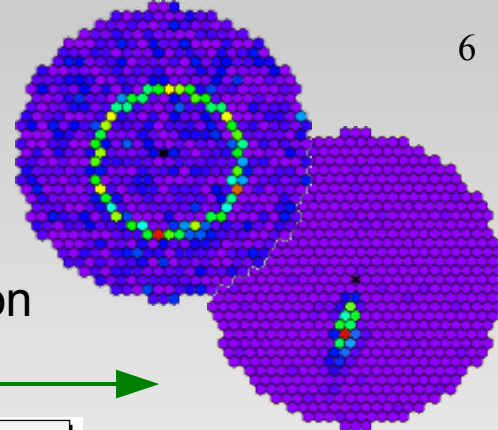
Cones
angular acceptance





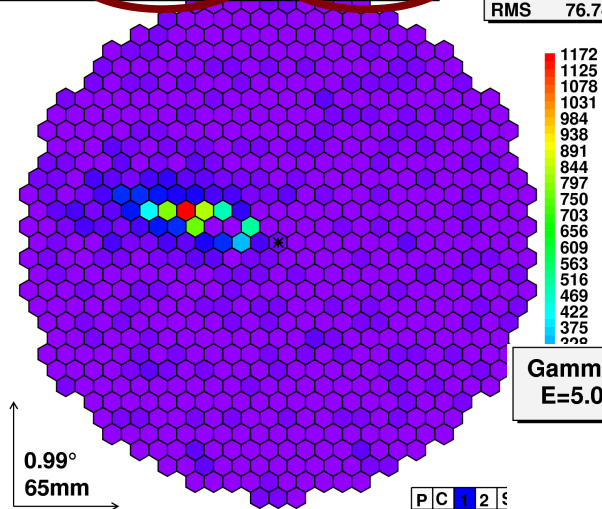
CERES

Camera Electronics and REflector Simulation

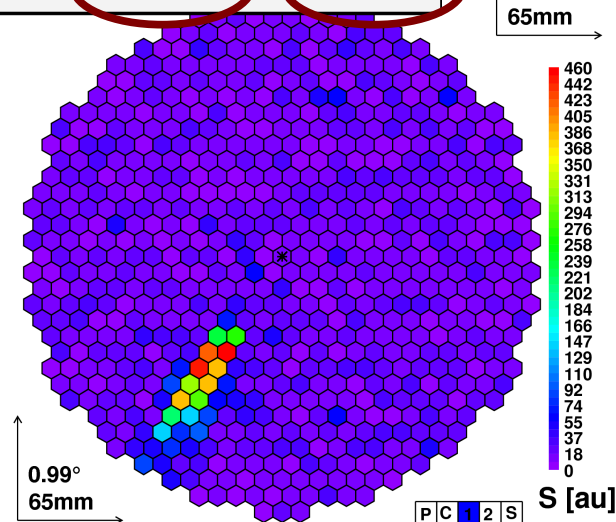


Gamma Event #7 Field #314
E=5.0TeV r=70m Zd=30.0° 2.6kPhEI

Entries	1
Mean	29.48
RMS	76.74

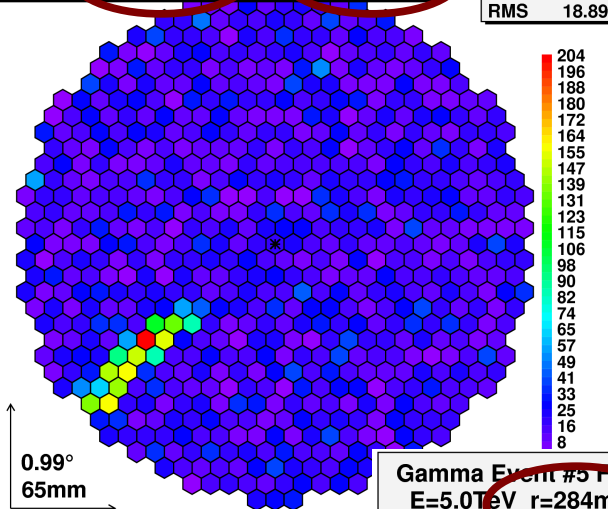


Gamma Event #4 Field #314
E=5.0TeV r=185m Zd=30.0° 1.1kPhEI



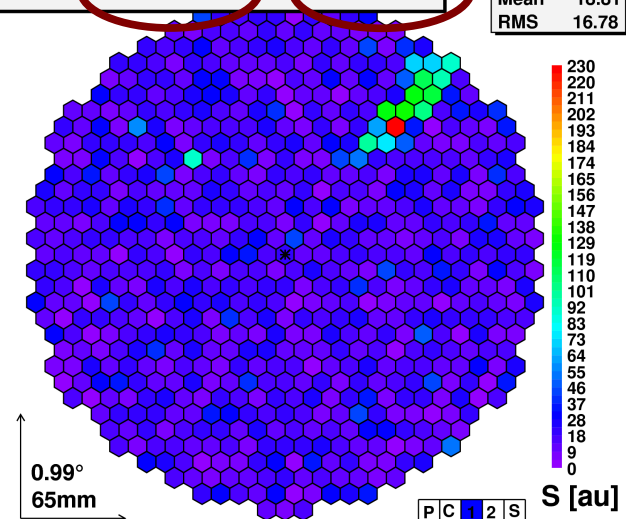
Gamma Event #6 Field #314
E=5.0TeV r=237m Zd=30.0° 454PhEI

Entries	1
Mean	19.18
RMS	18.89



Gamma Event #5 Field #314
E=5.0TeV r=284m Zd=30.0° 340PhEI

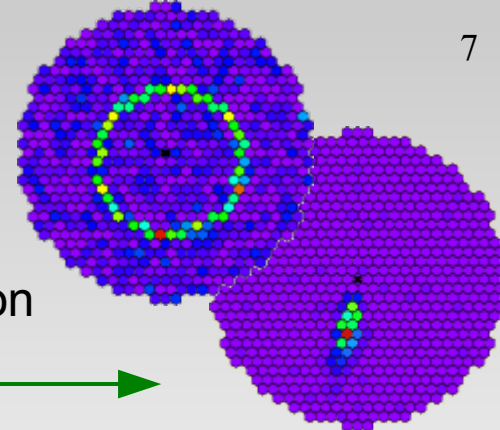
Entries	1
Mean	18.81
RMS	16.78





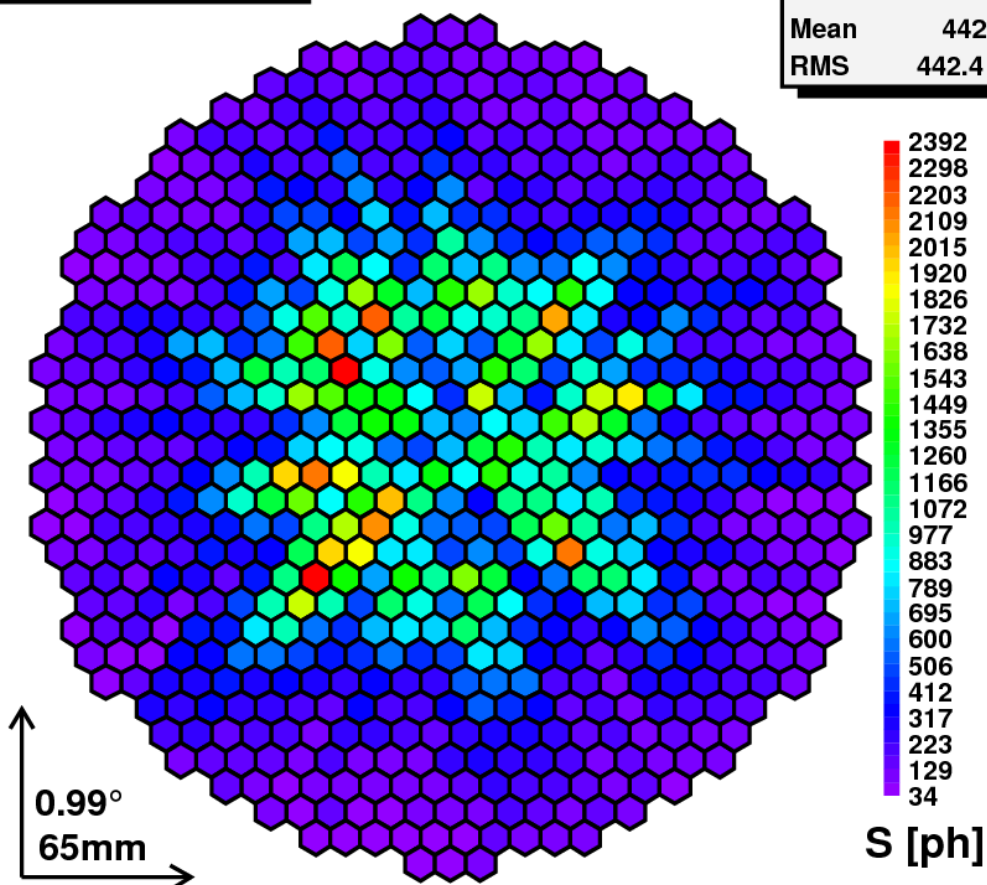
CERES

Camera Electronics and REflector Simulation



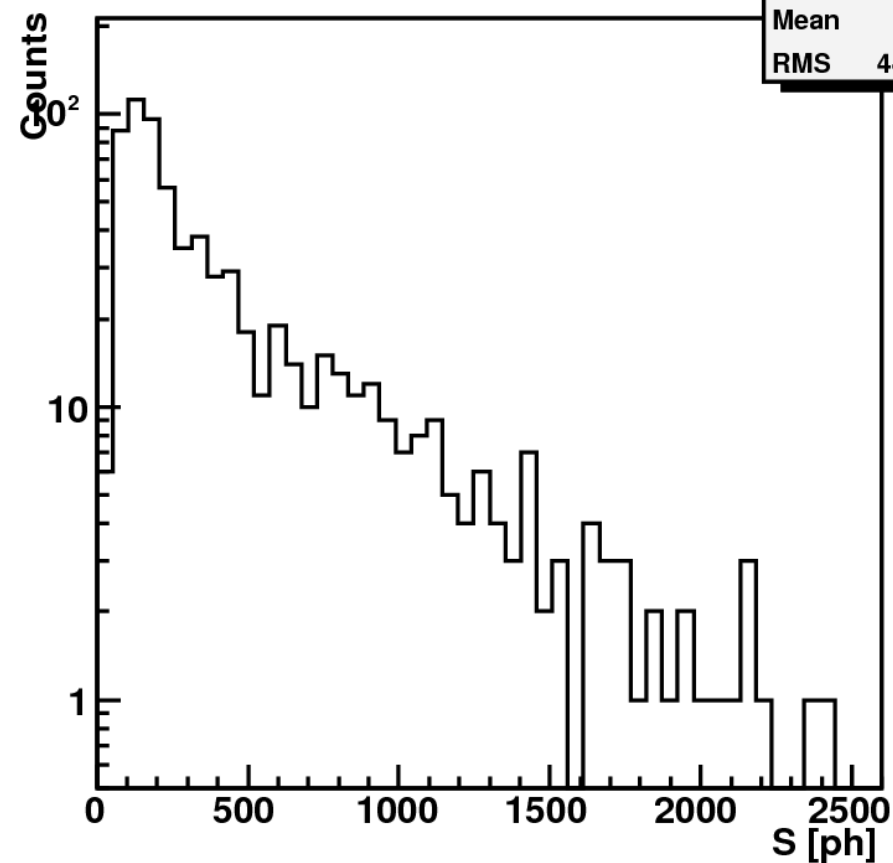
Maximum signal

MaxSignal;avg	
Entries	10931
Mean	442
RMS	442.4



Projection

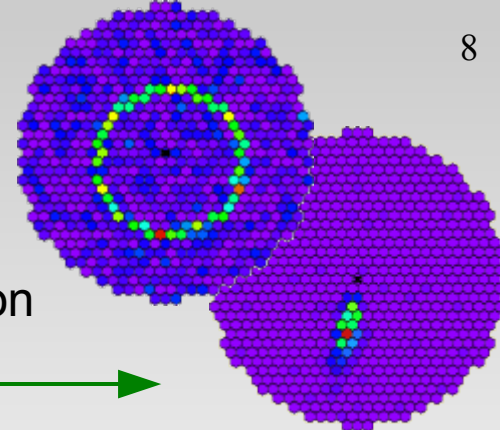
MaxSignal;proj	
Entries	703
Mean	442
RMS	442.4





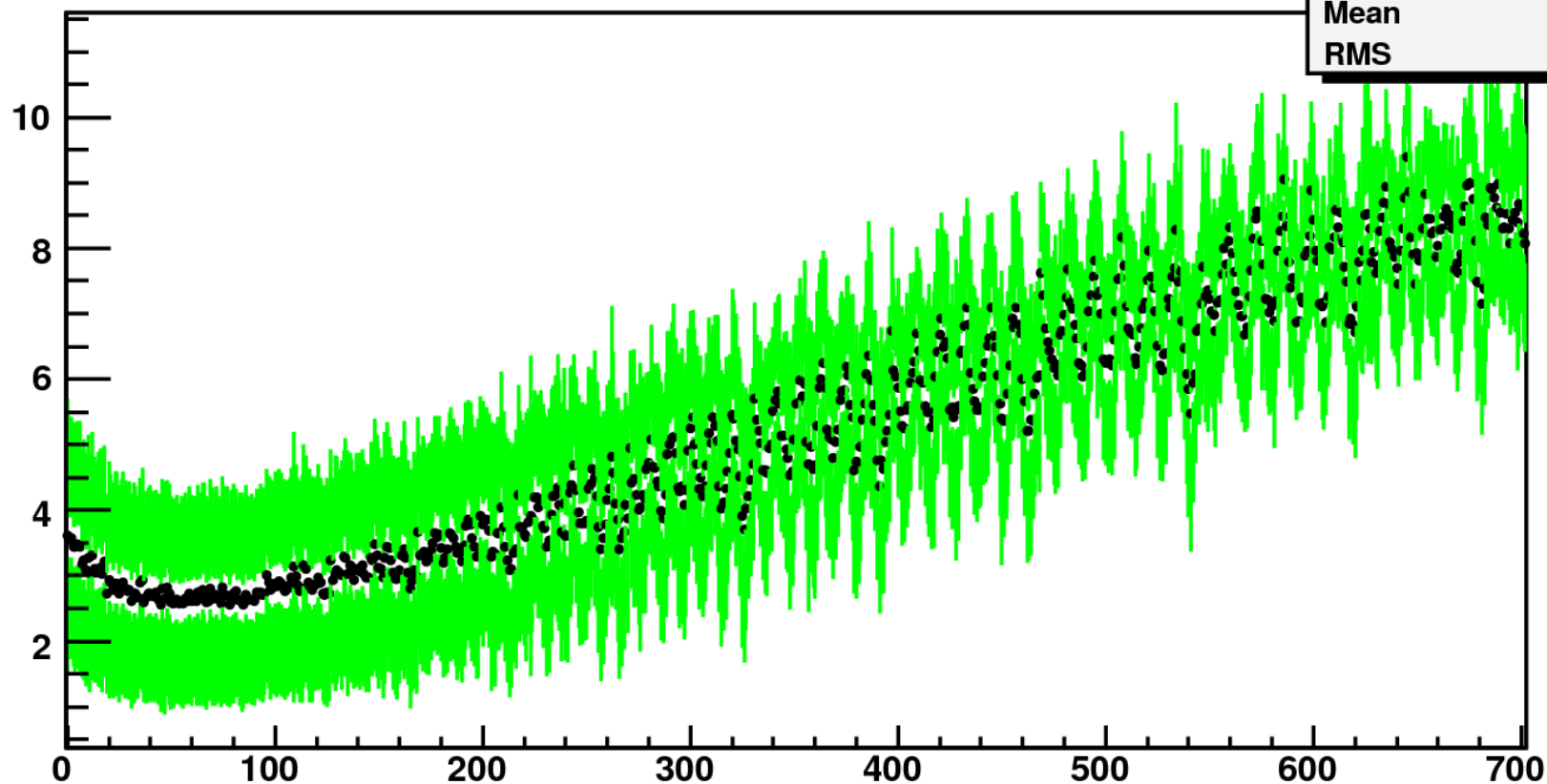
CERES

Camera **E**lectronics and **R**Eflector **S**imulation



Time after first photon

T [ns]

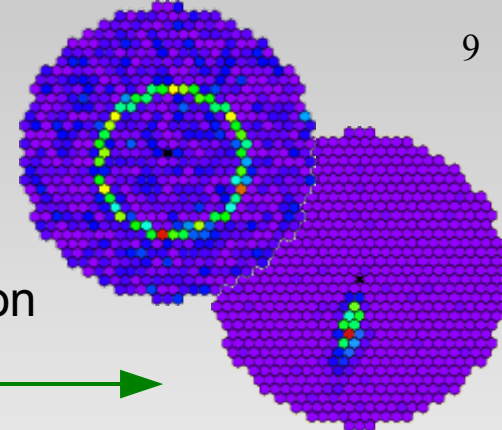


ArrTm;avg	
Entries	10139
Mean	5.268
RMS	1.967

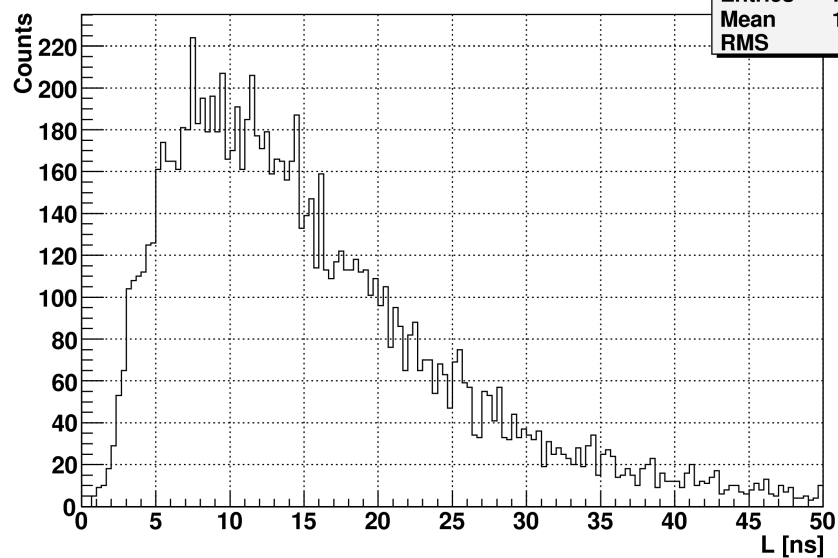


CERES

Camera Electronics and REflector Simulation

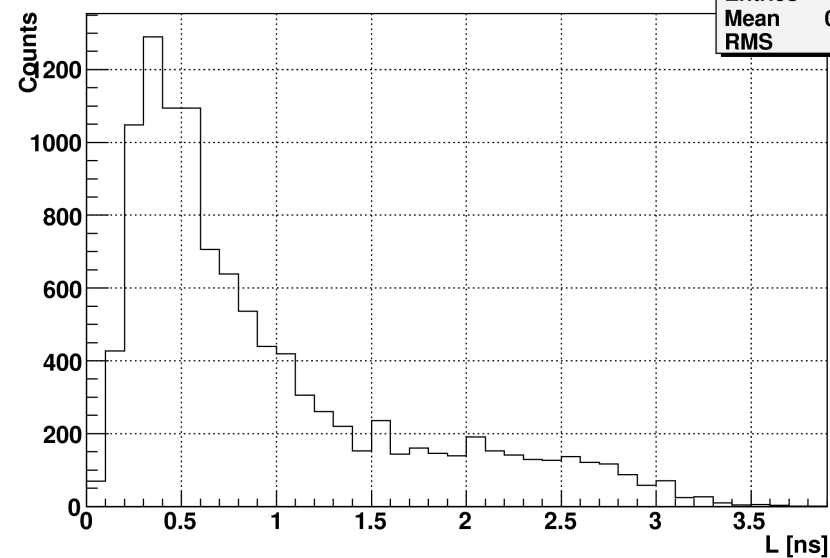


Time between first and last photon hitting a detector



Median deviation (1σ)

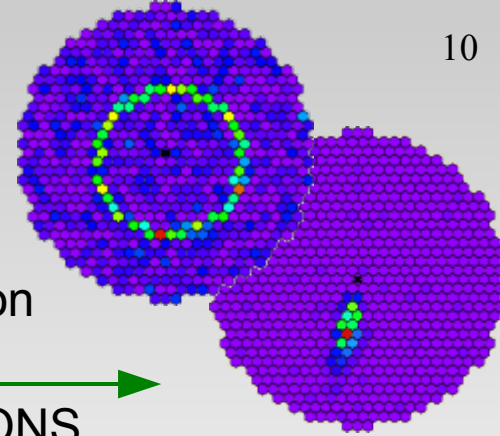
Gammas, DWARF



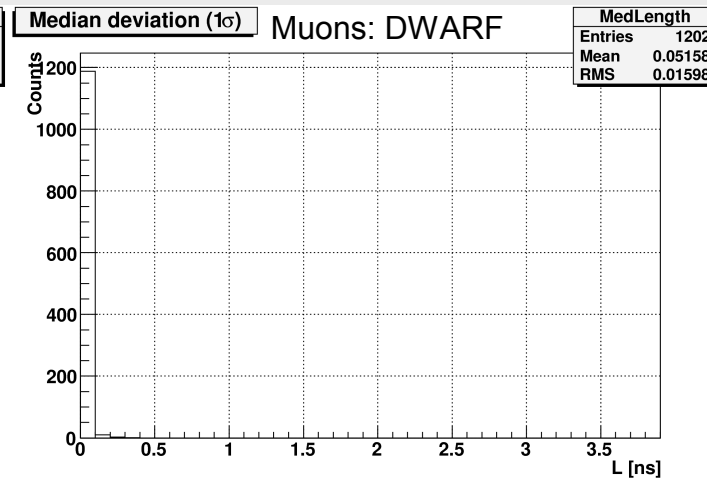
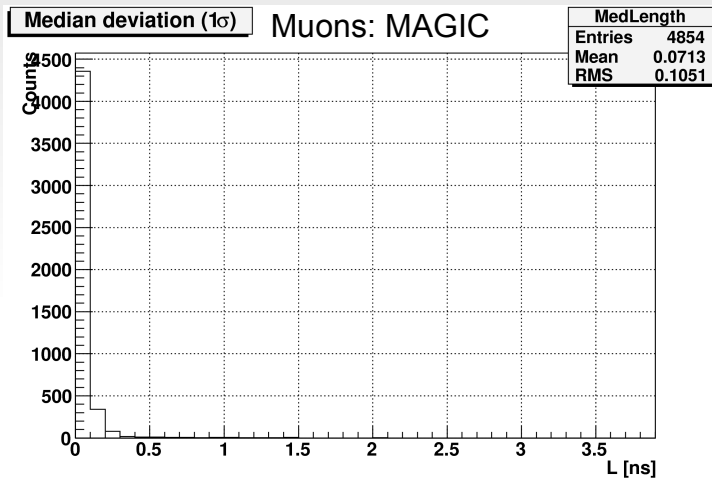


CERES

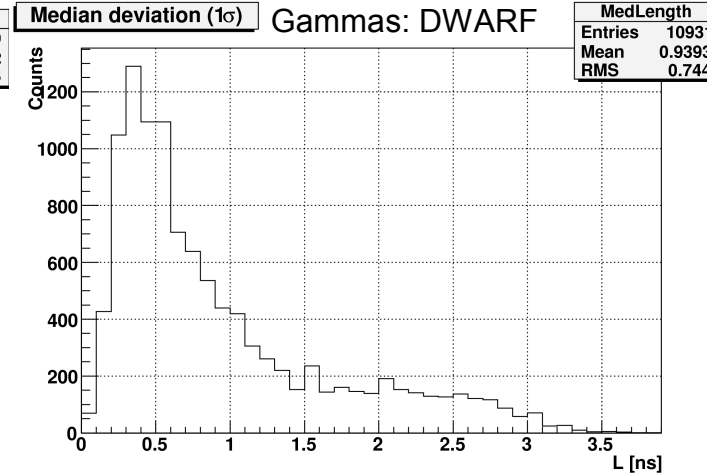
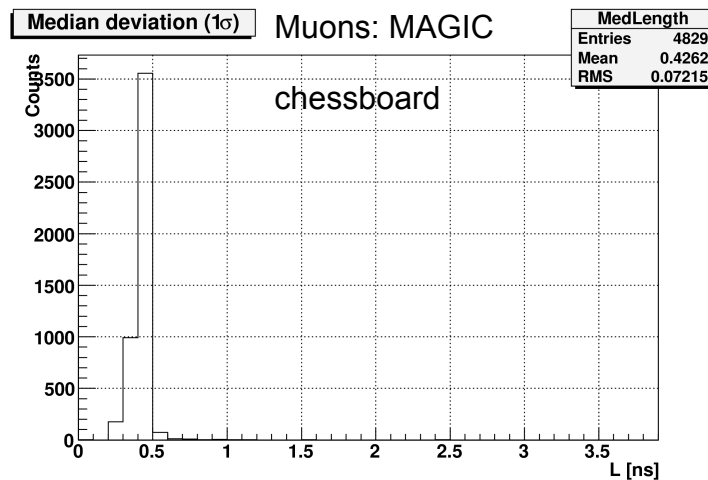
Camera Electronics and REflector Simulation



Median deviation for photon arrival times MUONS



How to measure?

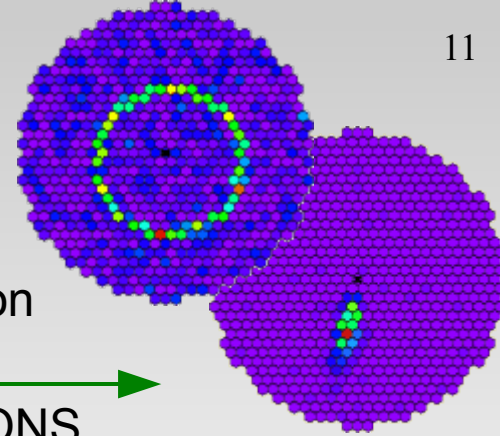




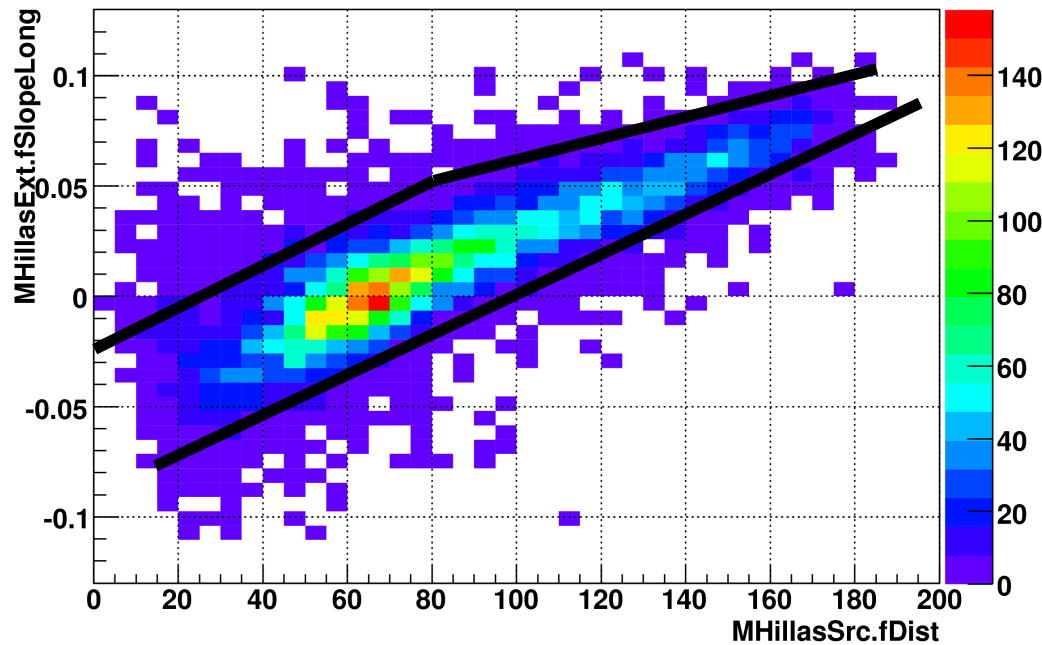
CERES

Camera **E**lectronics and **R**Eflector **S**imulation

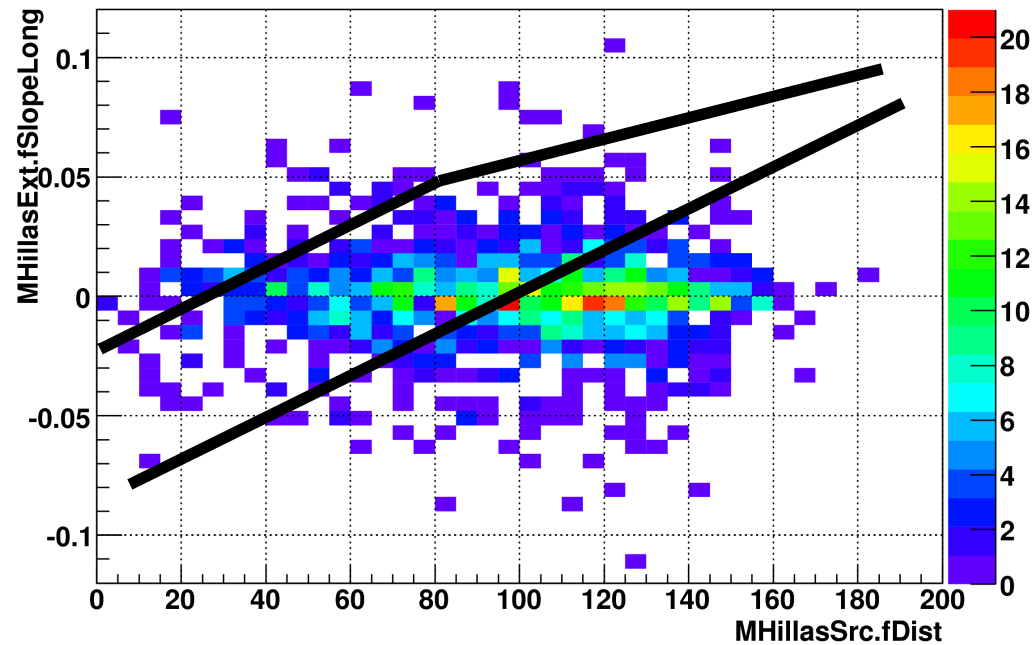
Median deviation for photon arrival times MUONS



$MHillasExt.fSlopeLong * MHillasSrc.fCosDeltaAlpha / \text{abs}(MHillasSrc.fCosDeltaAlpha); MHillasSrc.fDist$ ($MHillasExt.fSlopeLong < 0.3$)



$MHillasExt.fSlopeLong * MHillasSrc.fCosDeltaAlpha / \text{abs}(MHillasSrc.fCosDeltaAlpha); MHillasSrc.fDist$

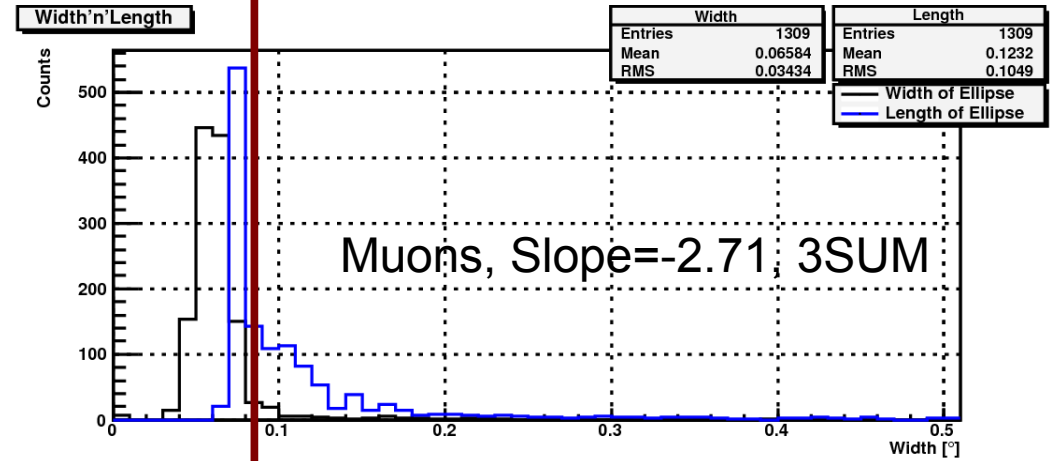
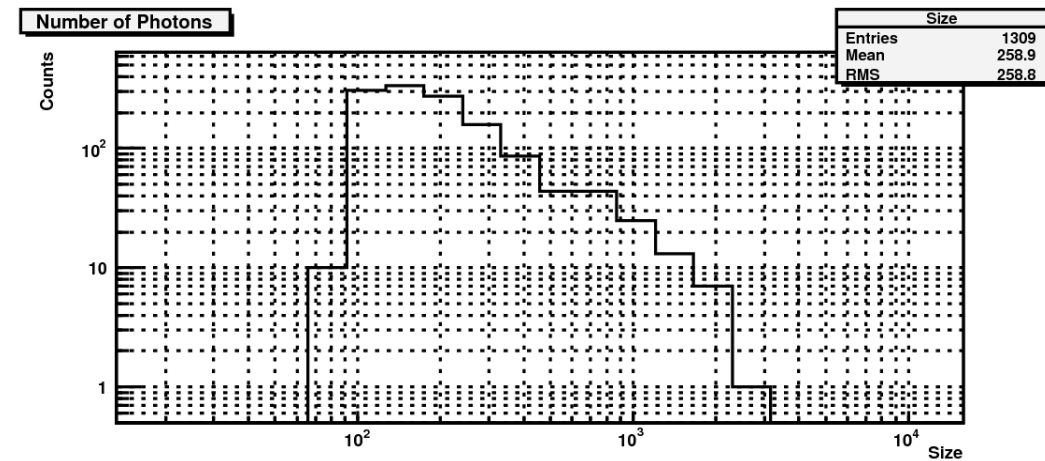
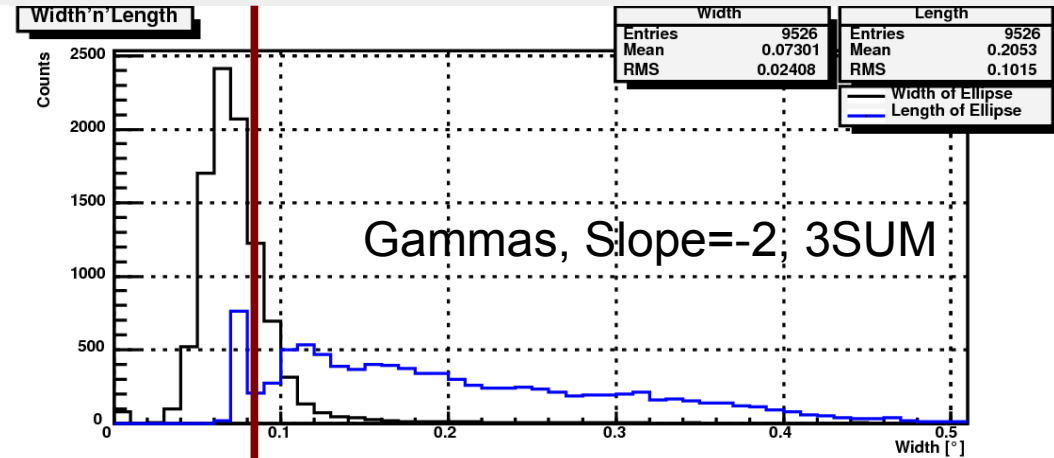
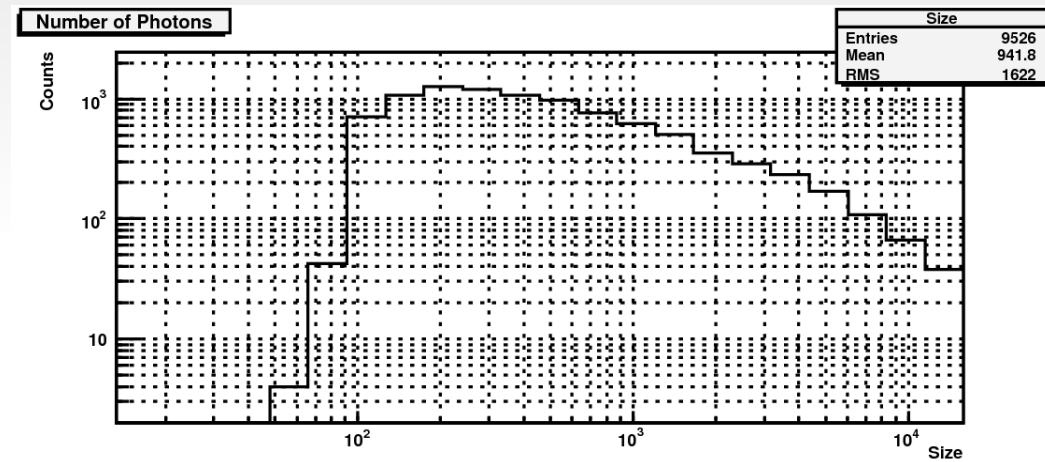
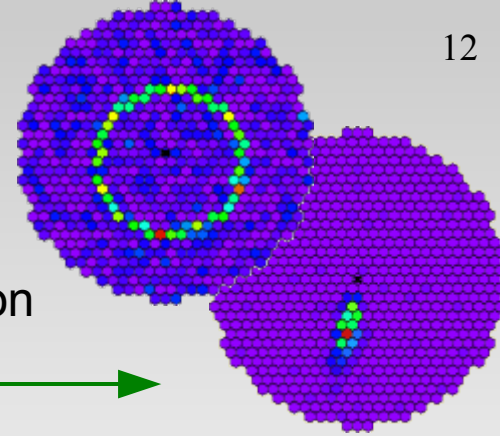




CERES

Camera Electronics and REflector Simulation

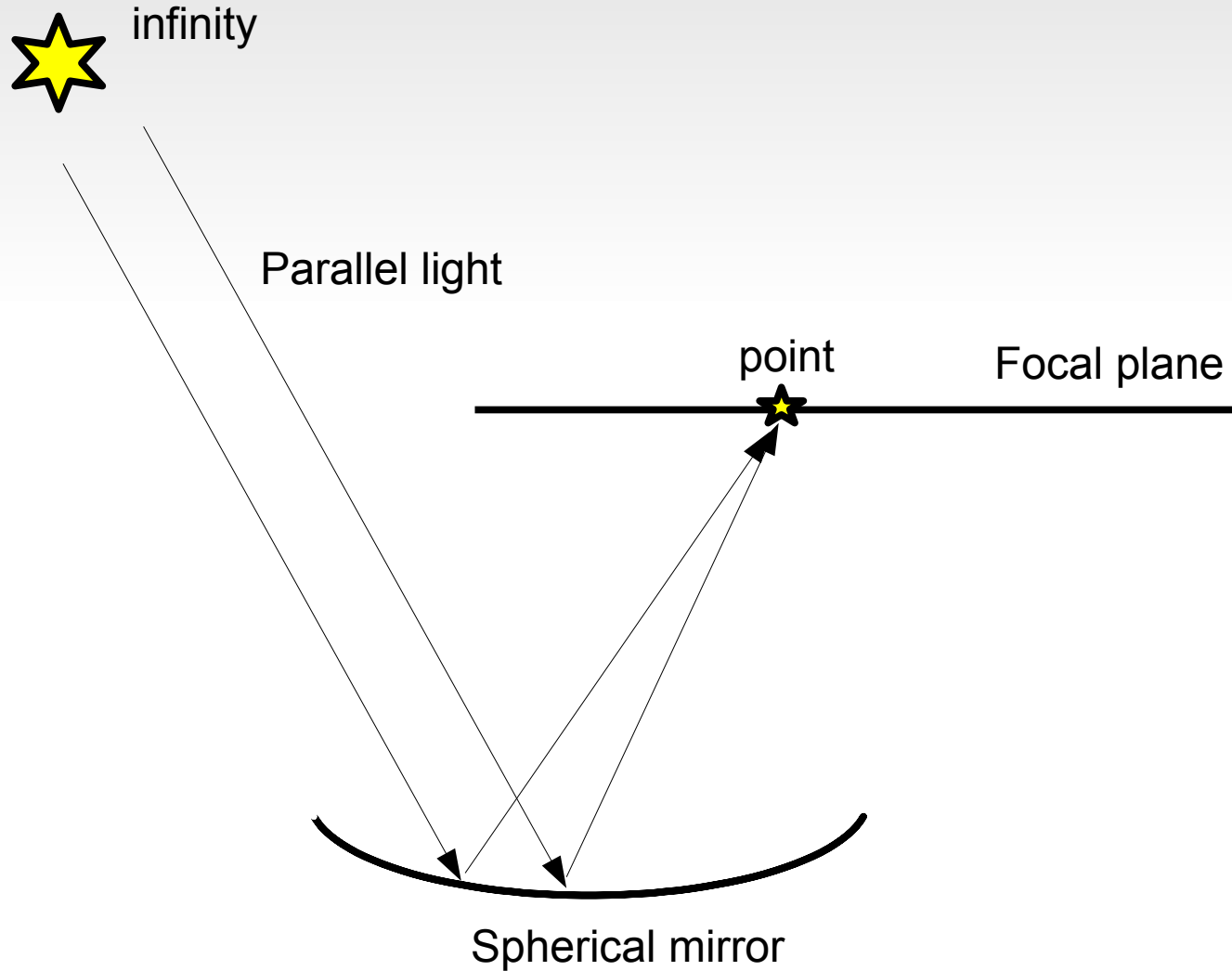
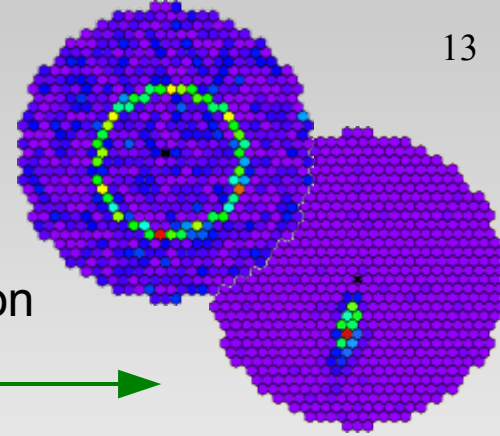
Reconstructed images (callisto, star), 3SUM





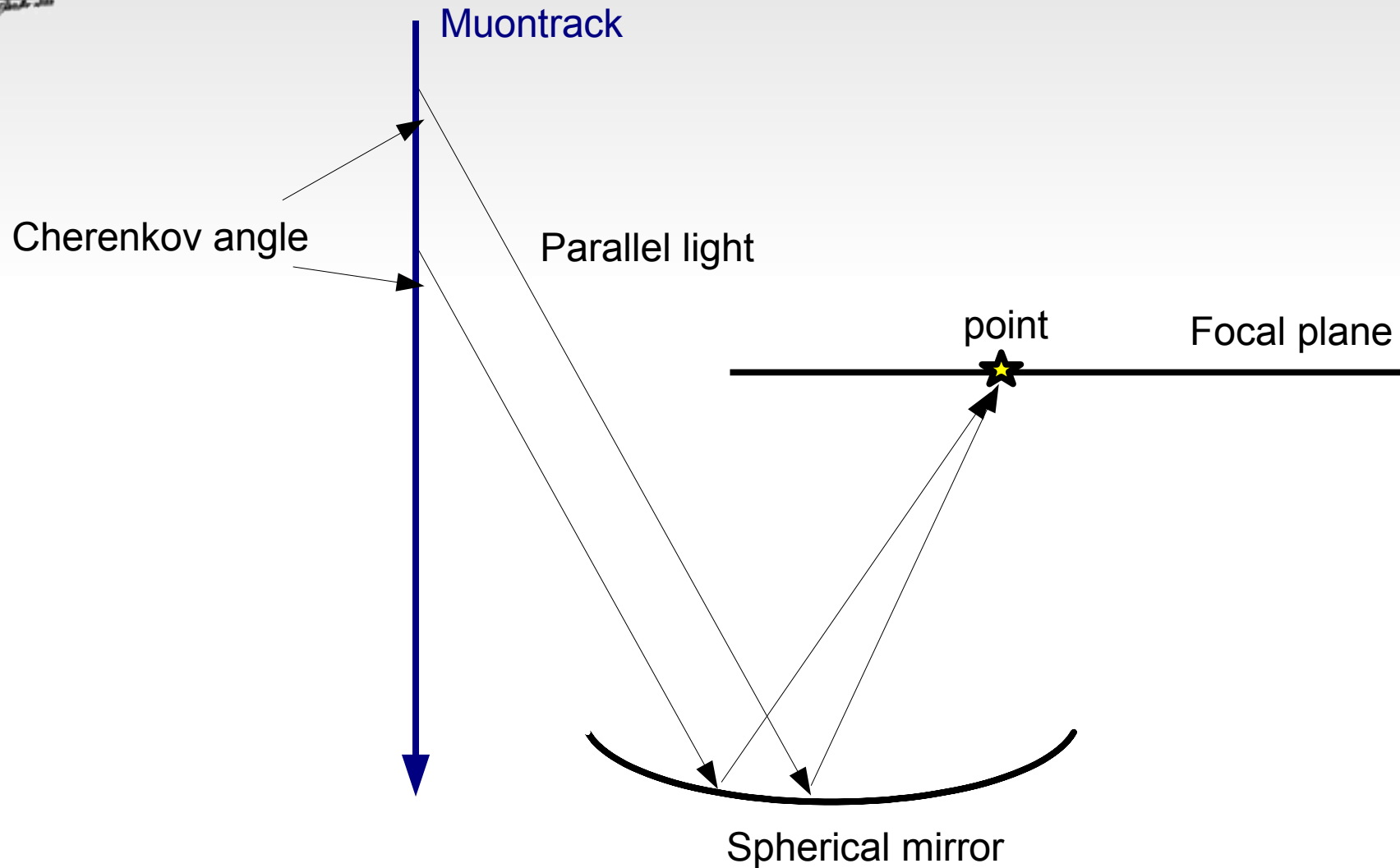
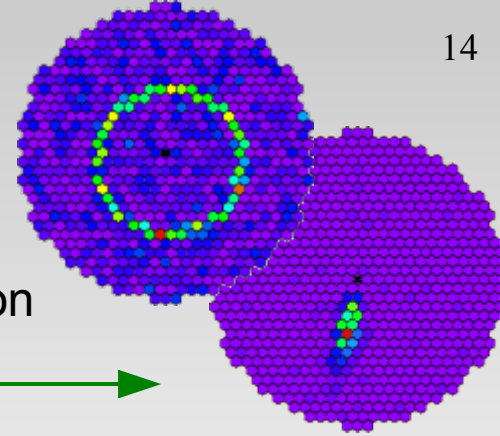
CERES

Camera Electronics and REflector Simulation



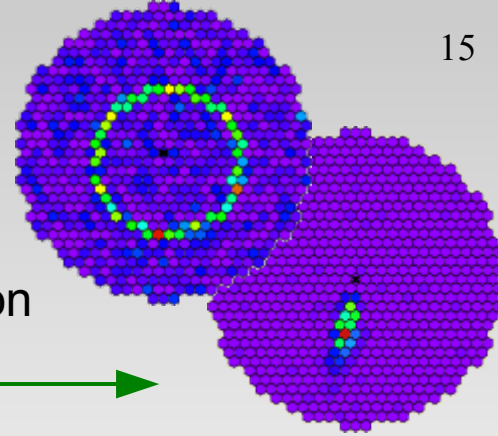
CERES

Camera Electronics and REflector Simulation

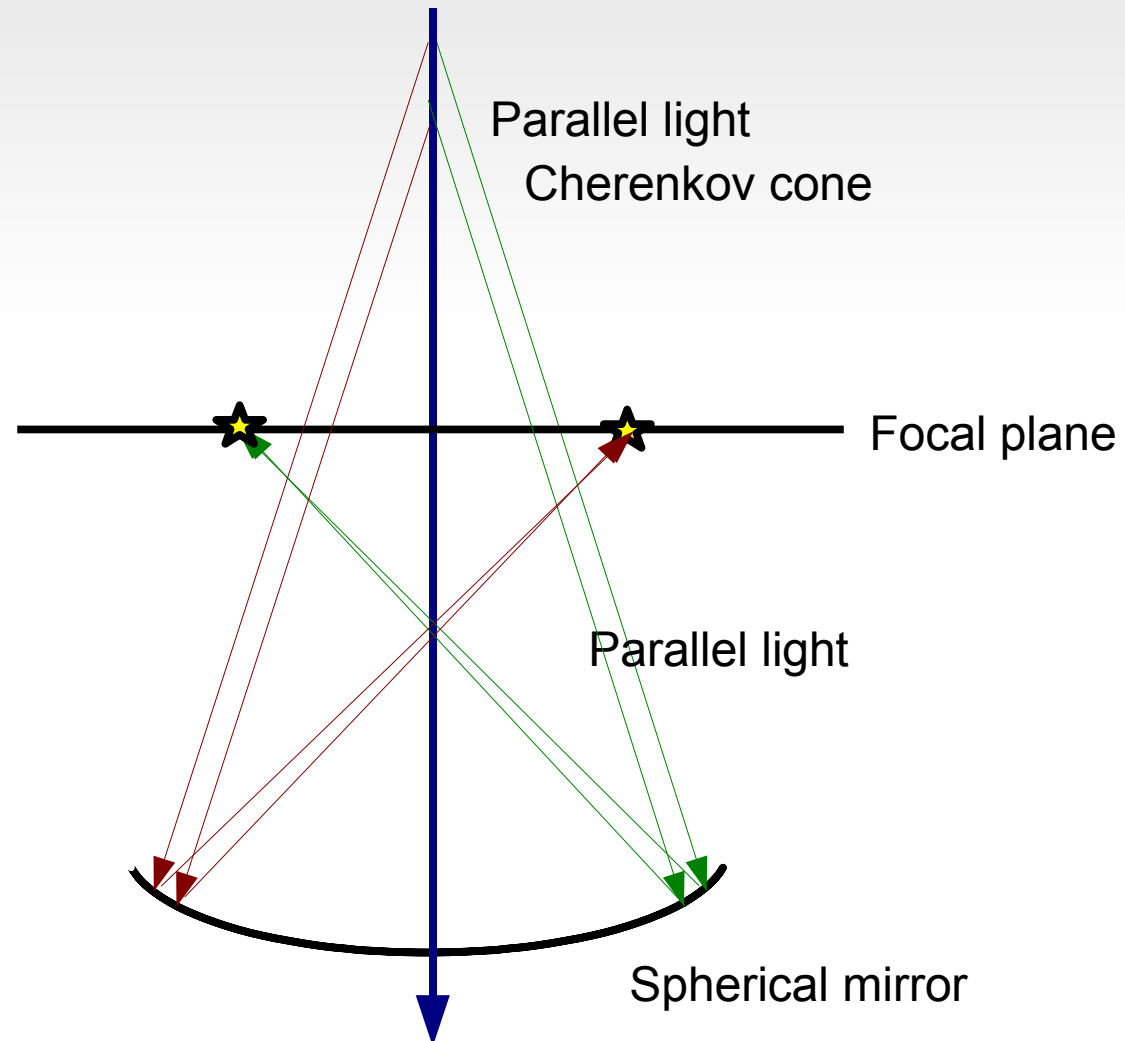


CERES

Camera Electronics and REflector Simulation



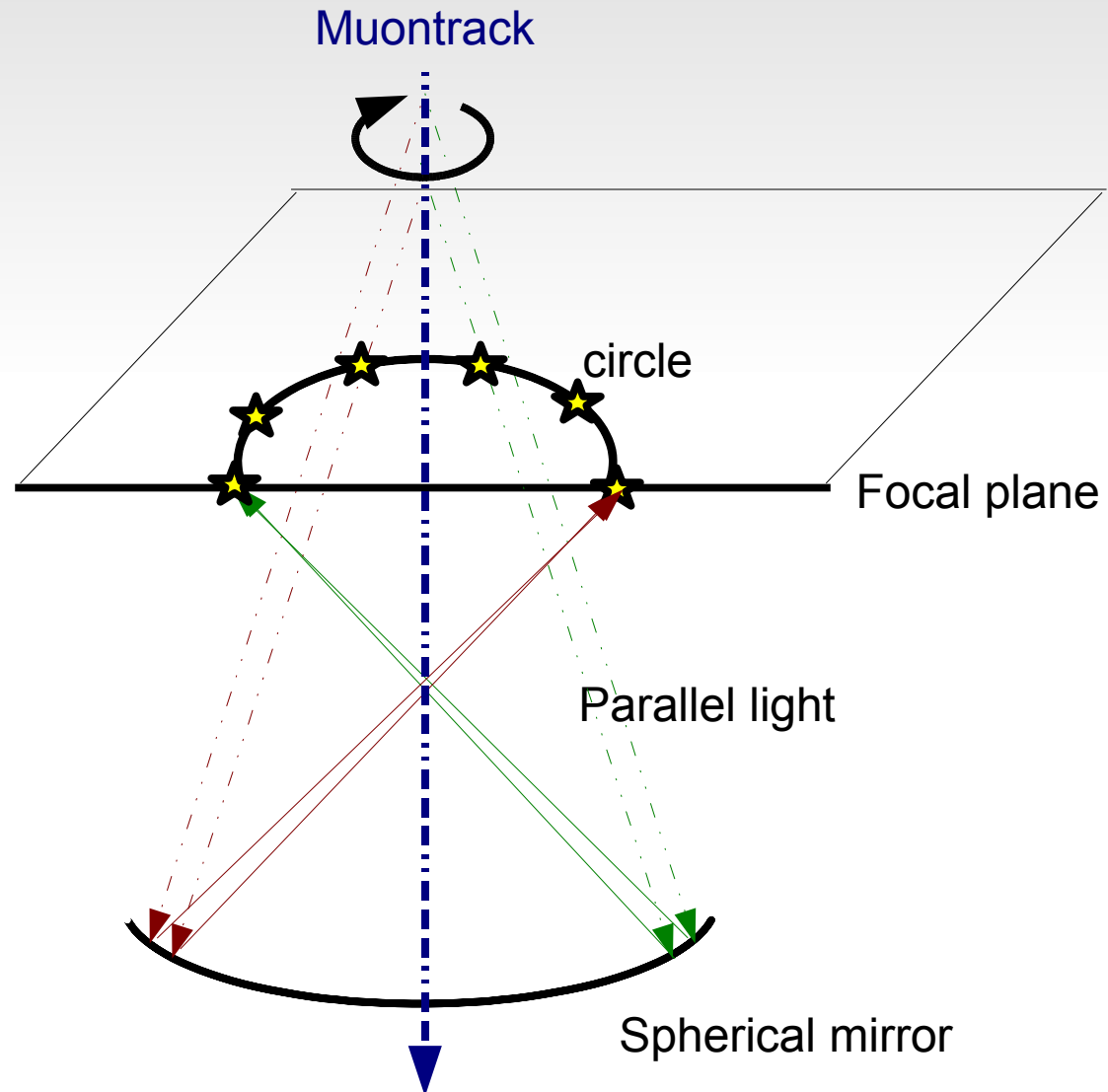
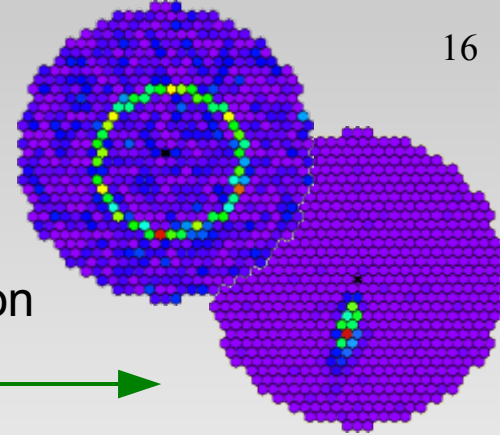
Muontrack





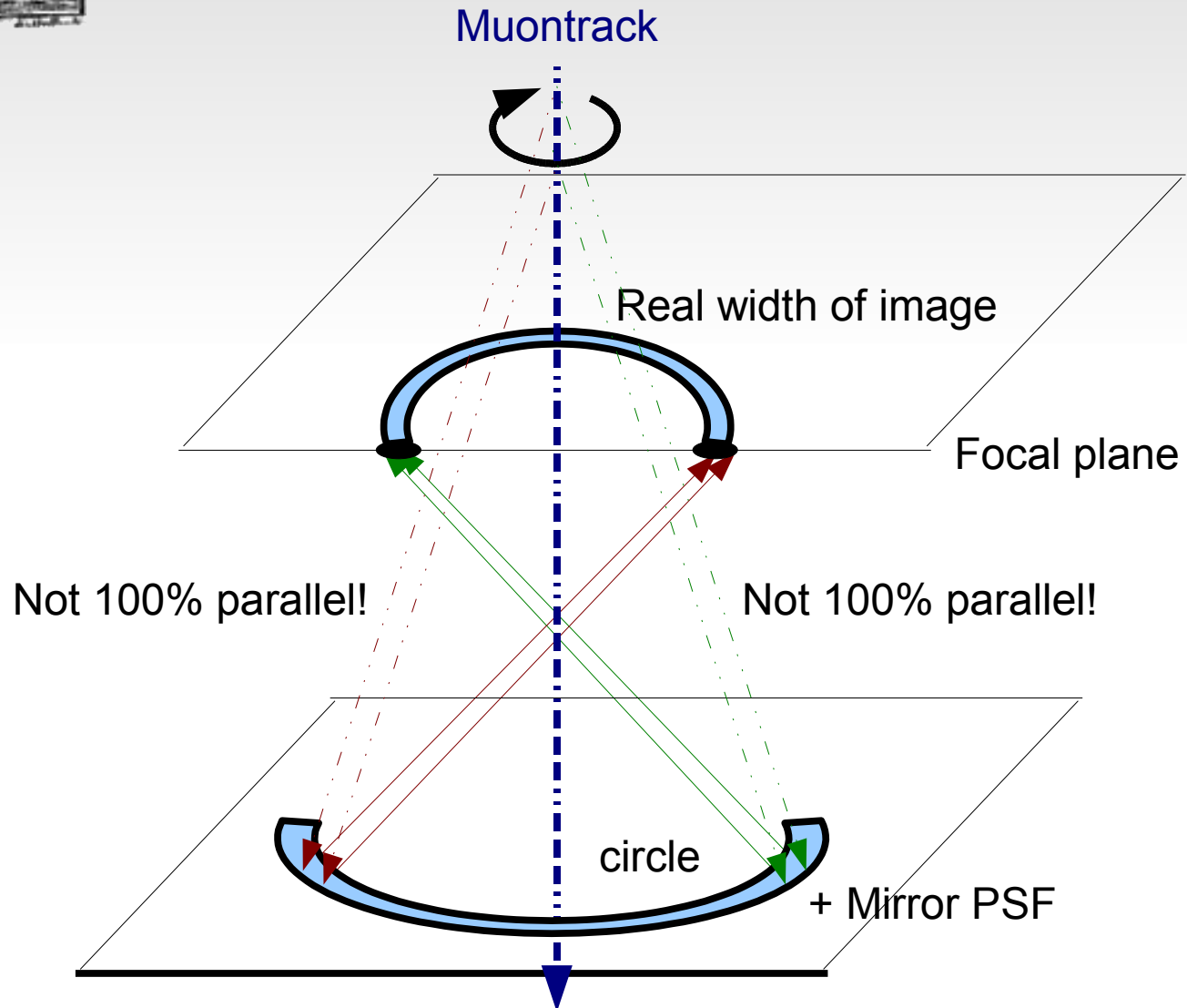
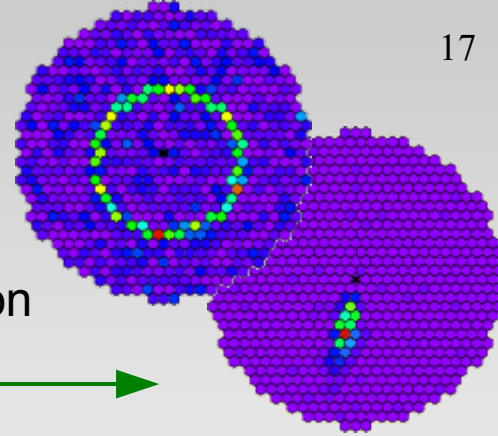
CERES

Camera Electronics and REflector Simulation



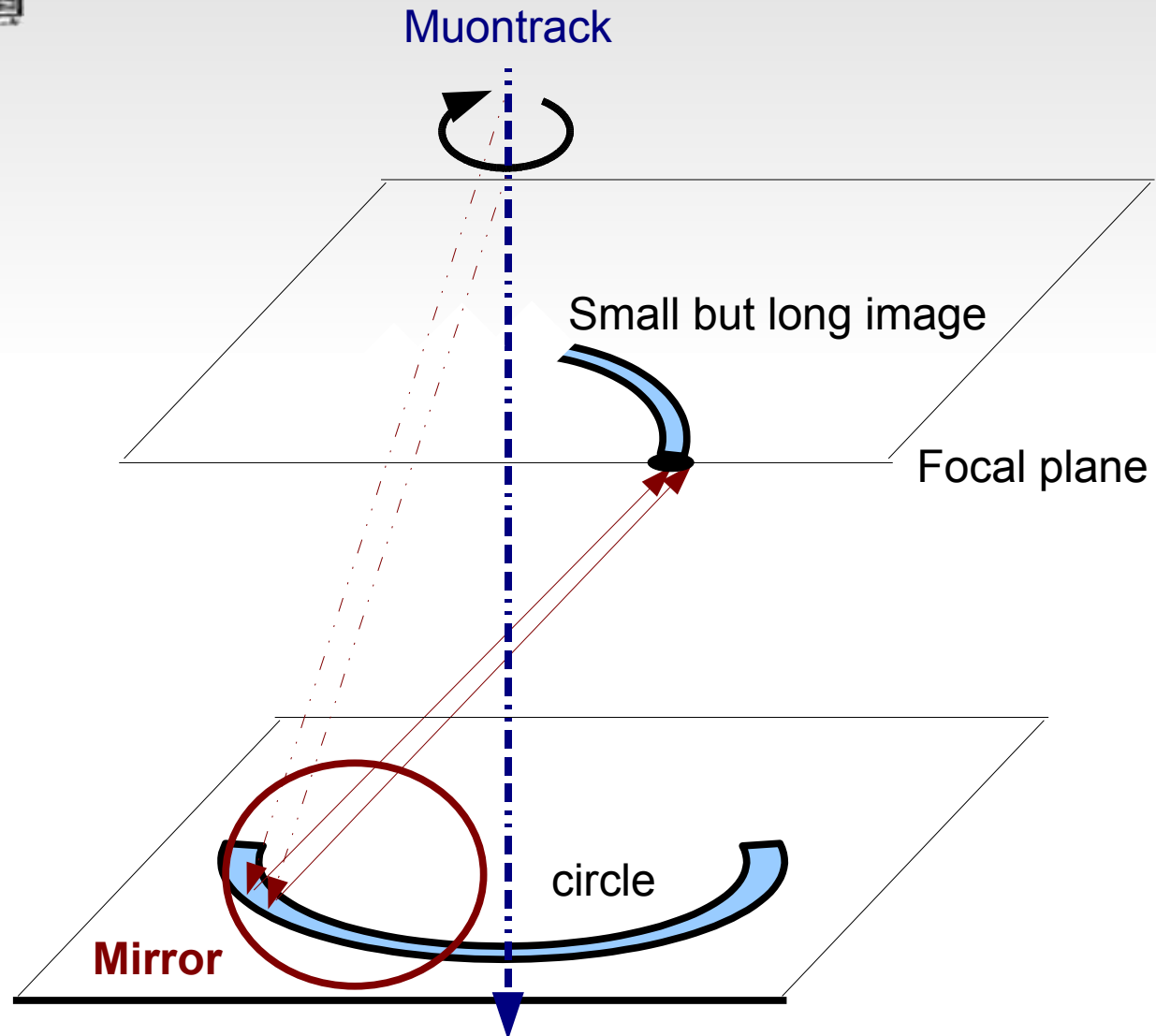
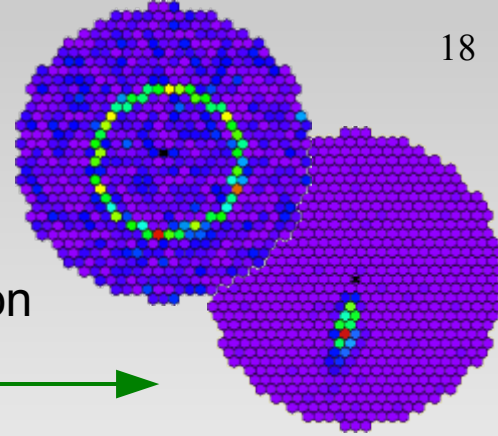
CERES

Camera **E**lectronics and **R**Eflector **S**imulation



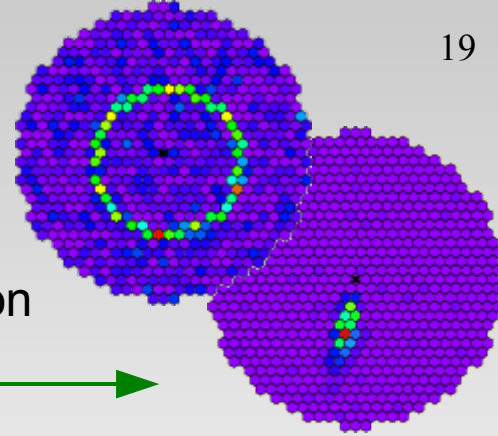
CERES

Camera **E**lectronics and **RE**flector **S**imulation

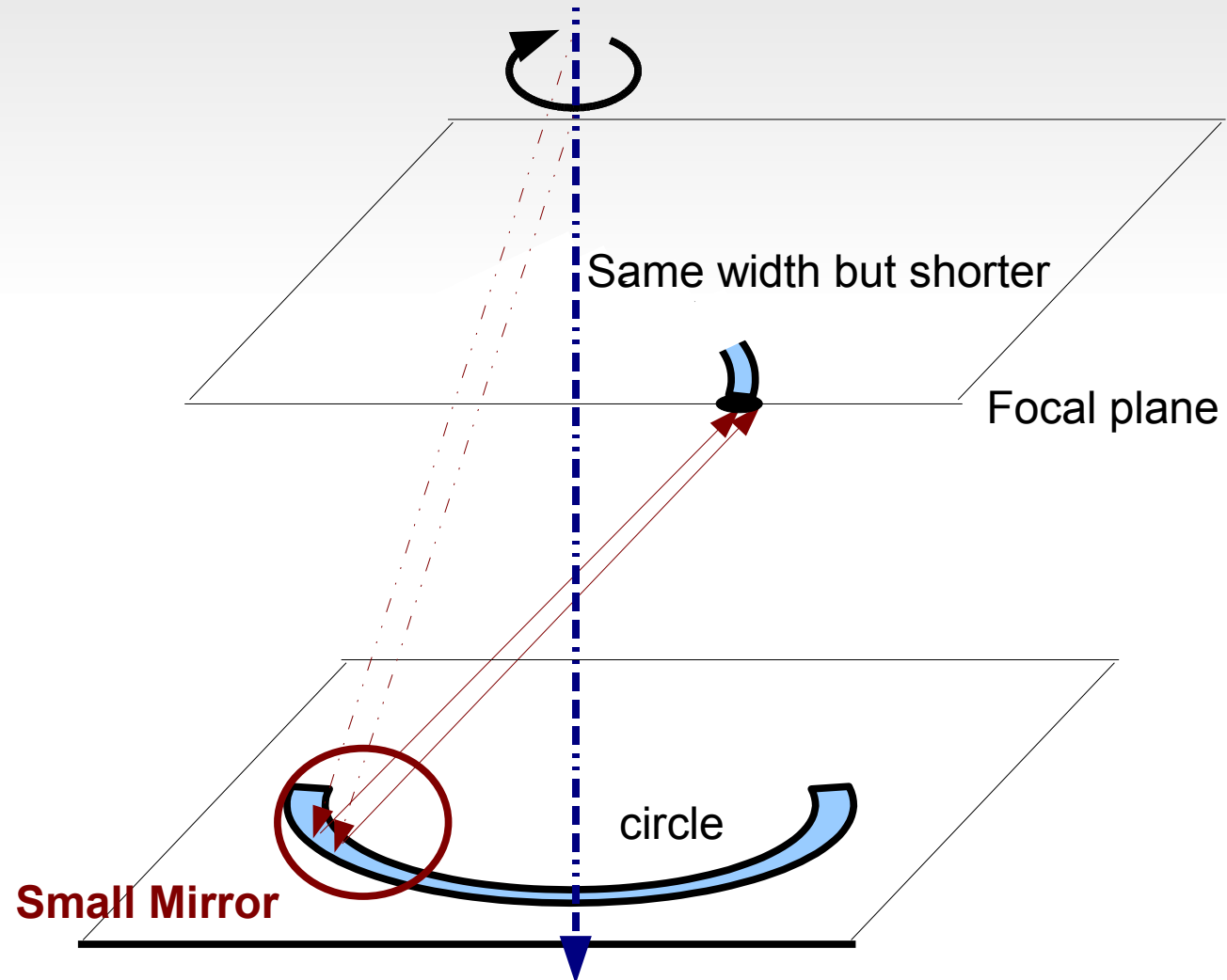


CERES

Camera **E**lectronics and **R**Eflector **S**imulation



Muontrack

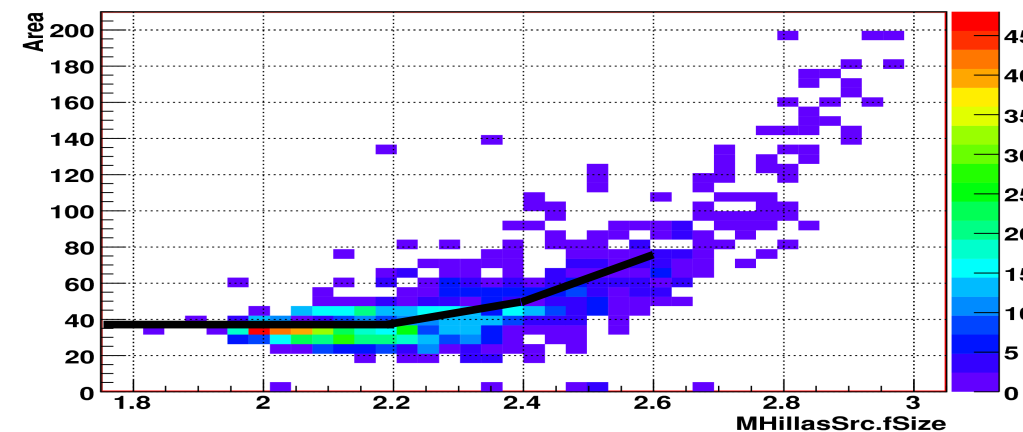
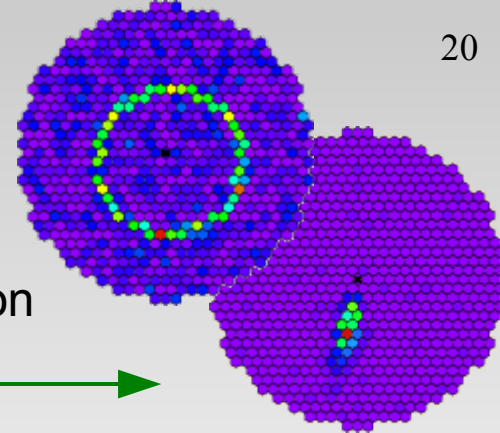




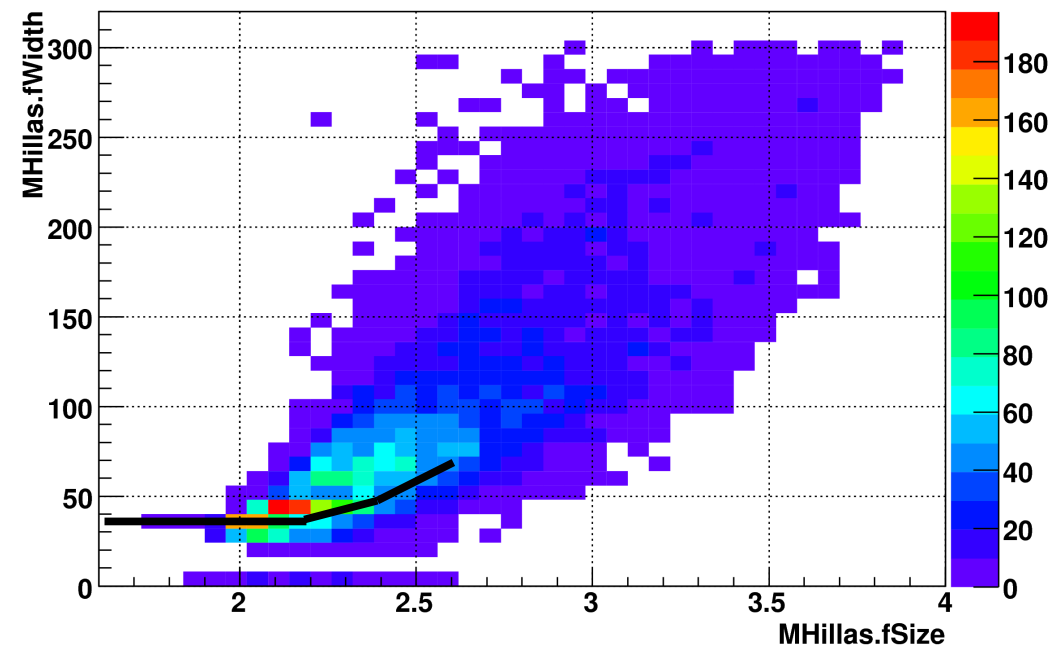
CERES

Camera **E**lectronics and **R**Eflector **S**imulation

Reconstructed images (callisto, star), 3SUM



MHillas.fWidth*MHillas.fLength:log10(MHillas.fSize) {MHillas.fWidth*MHillas.fLength<300}

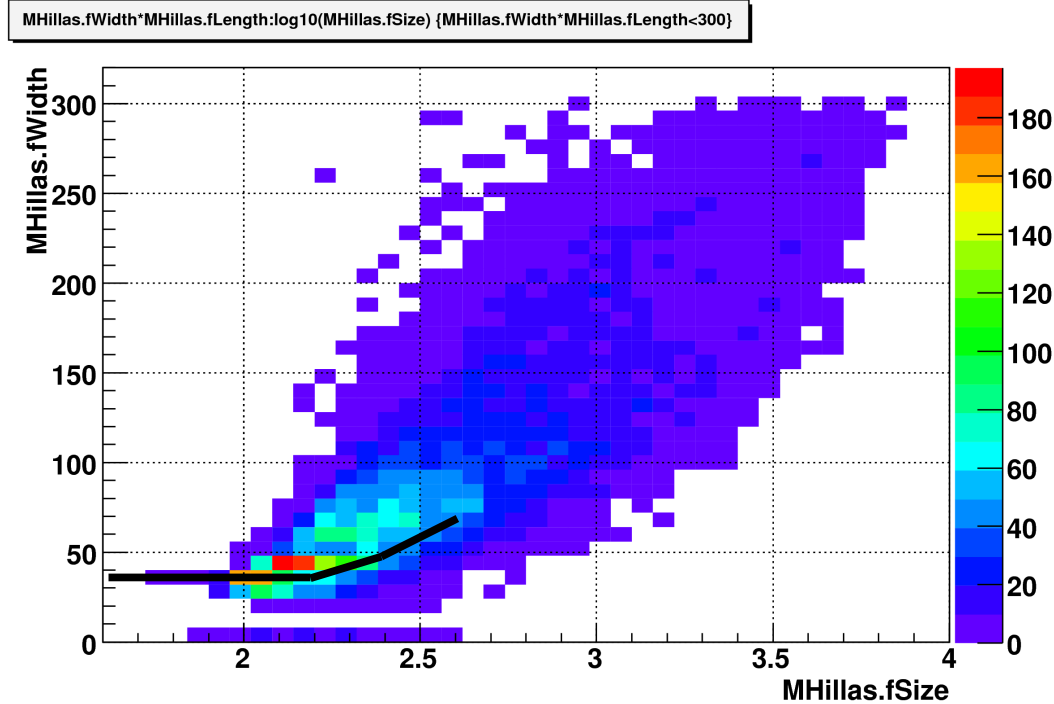
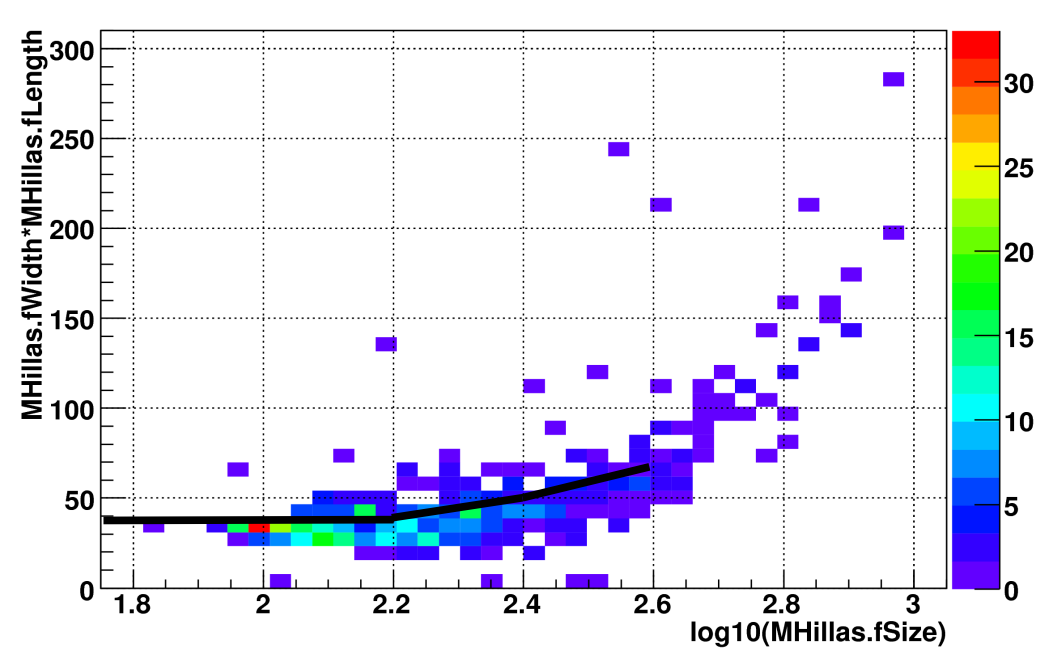
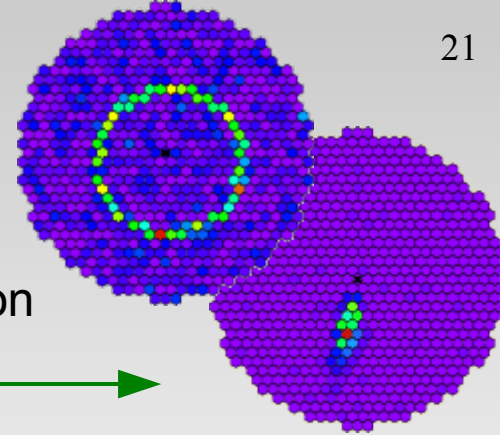




CERES

Camera Electronics and REflector Simulation

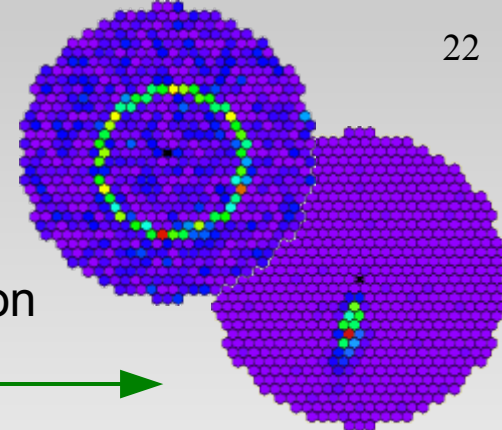
Reconstructed images (callisto, star), 3SUM
after cut in slope-vs-dist





CERES

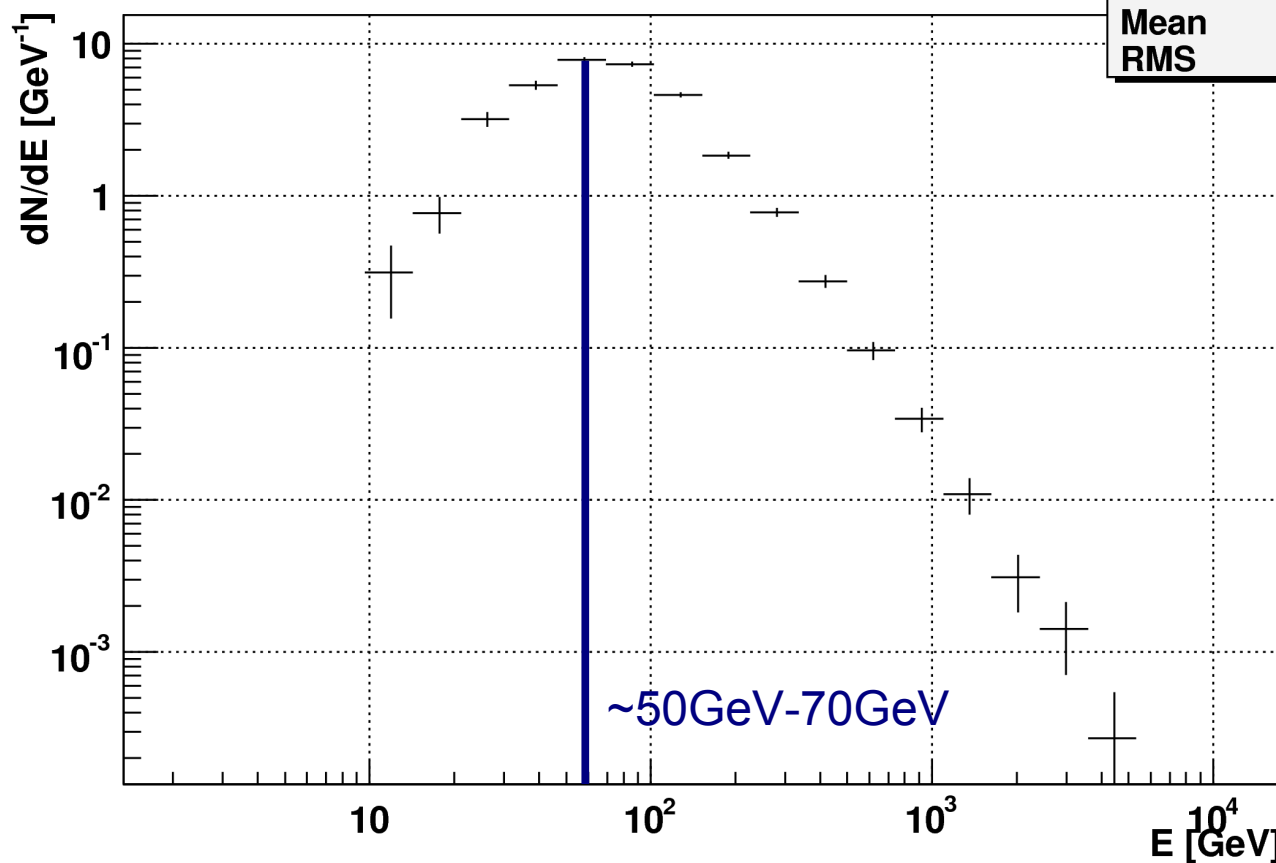
Camera Electronics and REflector Simulation



MAGIC Trigger threshold

No tuning (e.g. pulse shape, outer pixels), no PMT simulation (conversion from photons to photoelectrons)

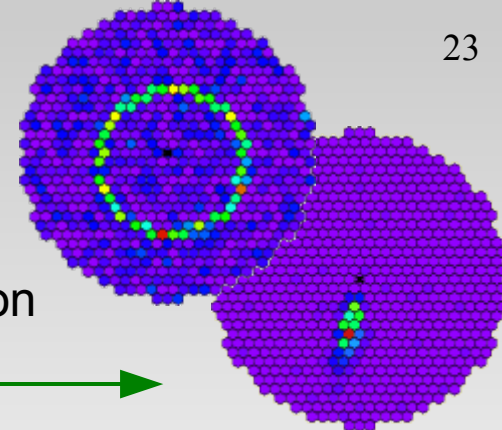
Energy Threshold | 4NN, Discriminator @ 9ph-11ph



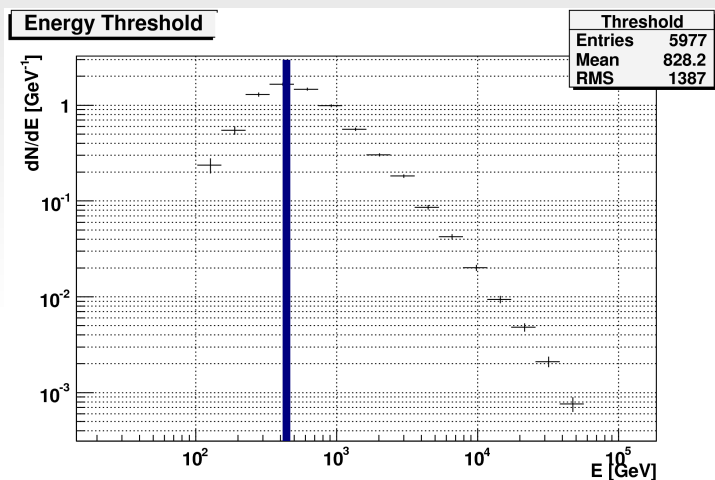


CERES

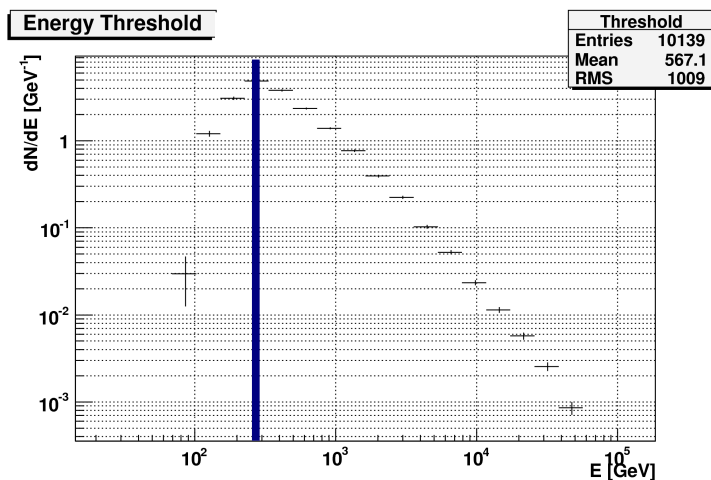
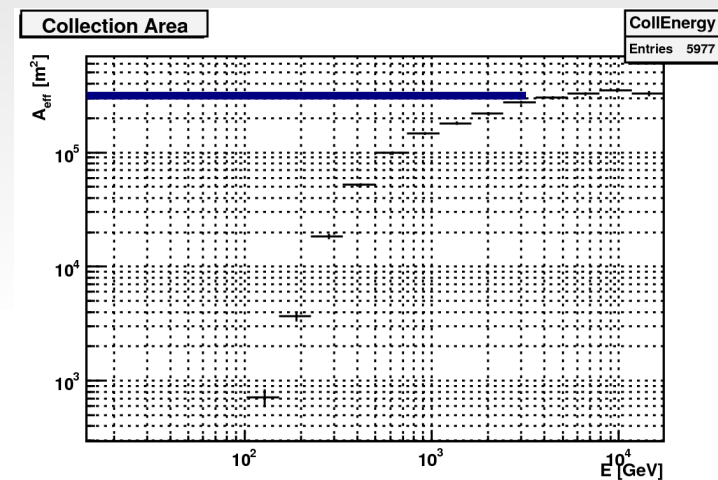
Camera Electronics and REflector Simulation



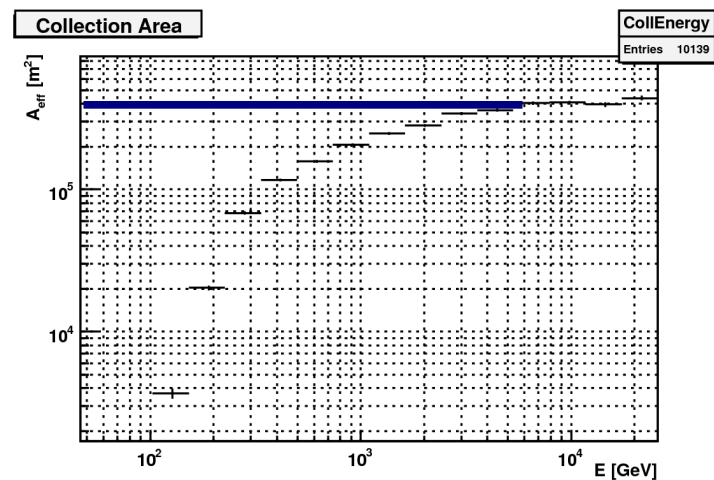
DWARF: Trigger threshold @ 50Hz NSB



MAGIC like
3NN trigger



3-pixel
sum-trigger

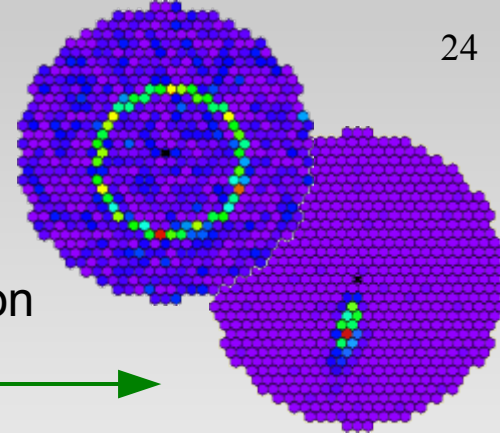




CERES

Camera **E**lectronics and **R**eflector **S**imulation

Reconstructed images (callisto, star), 3SUM



Threshold: Spectral slope=-2, $|\text{Alpha}| < 10^\circ$

